

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

Claim 1 (canceled).

2. (new): A network system comprising:

a plurality of networks which are interconnected to each other,

wherein each network comprises:

a plurality of hosts, and

a policy server,

wherein each policy server of each network sets a quality-guaranteed path in the network to which it belongs according to a policy held in the policy server,

wherein a policy server in a first one of said networks comprises:

a policy holding unit for holding a policy that can be guaranteed in said first network with regard to a communication performed by another network via said first network or a communication performed between another network and a host in said first network,

a unit for providing a quality-guaranteed path having a required quality on the basis of the policy held by said holding unit with regard to a communication performed by another network via said first network or a communication performed between another network and the host in said first network,

a policy sending unit for sending the policy held by it to the policy server of said another network,

a unit for receiving a policy sent by the policy sending unit in the policy server of said another network, and

a resource allocation arbitration control unit for calculating a guaranteed quality of a communication path from an end point in said first network to a border on a second network side of a connection path connected to said second network adjoining said first network based on the policy held by said policy holding unit and the policy thus received,

wherein said resource allocation arbitration control unit updates said policy held by said policy holding unit based on the quality thus calculated, and

wherein said policy sending unit sends the policy thus updated to the policy server in said second network.

3. (new): The system of claim 2, wherein if the end point in said first network is a border of a third network adjoining said first network, said resource allocation arbitration control unit further calculates a guaranteed quality of a communication path from an end point in said third network to the border on said second network side of the connection path, based also on a policy received from said third network.

4. (new): The system of claim 3, wherein said resource allocation arbitration control unit previously calculates qualities that can be guaranteed for possible paths between said first network and said other network, and

wherein when receiving from the host of said first network a request for a quality-guaranteed path having a specified quality, said unit for providing a quality-guaranteed path provides a quality-guaranteed path which guarantees the specified quality and which has a quality calculated by said resource allocation arbitration control unit as being higher than the specified quality.

5. (new): The system of claim 3, wherein said resource allocation arbitration control unit previously calculates the guaranteed quality of each possible path between a host in said first network and a host in said other network, and

wherein when receiving from the host of said first network a request for a quality-guaranteed path having a specified quality, said unit for providing a quality-guaranteed path provides a quality-guaranteed path which guarantees the specified quality and which has a quality calculated by said resource allocation arbitration control unit as being higher than the specified quality.

6. (new): The system of claim 5, wherein said unit for providing a quality-guaranteed path allocates to the quality-guaranteed path extending through said first network as much resource of said first network as is required by the quality-guaranteed for the quality-guaranteed path,

wherein said policy sending unit requests the policy server of said another network, through which the quality-guaranteed path to be provided extends, to allocate to the quality-guaranteed path as much resource of said another network as is required by the quality guaranteed for the quality-guaranteed path, and

wherein said unit for providing a quality-guaranteed path allocates the resource of said first network requested by the policy server of said another network to the quality-guaranteed path for which the resource allocation is requested.

7. (new): The system of claim 5, wherein said unit for providing a quality-guaranteed path comprises:

a unit to make a reservation for allocating to the quality-guaranteed path extending through said first network as much resource of said another network as is required by the quality guaranteed for the quality-guaranteed path,

a unit to request the policy server of said another network, through which the quality-guaranteed path to be provided extends, to make a reservation for allocating to the quality-guaranteed path as much resource of said other network as is required by the quality guaranteed for the quality-guaranteed path,

a unit to make a reservation for allocating the resource of said another network to the quality-guaranteed path for which the resource allocation is requested, and

a unit to allocate the resource of said another network according to the set reservation.

8. (new): The system of claim 6, wherein said unit for providing a quality-guaranteed path of said policy server manages a present resource allocation state, and performs the resource allocation when the resource allocation is allowed by the present resource allocation state managed by the resource management unit.

9. (new): A policy server for setting a quality-guaranteed path in a plurality of interconnected networks, comprising:

a policy holding unit for holding a policy that can be guaranteed in a first network, with regard to a communication performed by another network via the first network or a communication performed between another network and a host in the first network;

a unit for providing a quality-guaranteed path having a required quality on the basis of the policy held by said holding unit with regard to a communication performed by another network via the first network or a communication performed between another network and the host in the first network;

a policy sending unit for sending the policy held by it to the policy server of another network;

a unit for receiving a policy sent by the policy sending unit in the policy server of said other network; and

a resource allocation arbitration control unit for calculating a guaranteed quality of a communication path from an end point in the first network to a border on a second network side of a connection path connected to said second network adjoining the first network, based on the policy held by said policy holding unit and the policy thus received,

wherein said resource allocation arbitration control unit updates said policy held by said policy holding unit based on the quality thus calculated, and

wherein said policy sending unit sends the policy thus updated to the policy server in said second network.

10. (new): A method of guaranteeing the quality of a communication between a plurality of interconnected networks each including a policy server to provide a quality-guaranteed path between the networks, said method comprising the steps of:

storing in a policy holding unit a policy that can be guaranteed in said first network with regard to a communication performed by another network via said first network or a communication performed between another network and a host in said first network;

providing a quality-guarantee path having the required quality based on the policy held by said holding unit with regard to a communication performed by another network via said first network or a communication performed between another network and the host in said first network;

sending the policy held by it to the policy server in another network;

receiving a policy sent by the policy sending unit in the policy server of said other network;

calculating a guaranteed quality of a communication path from an end point in said first network to a border on a second network side of a connection path connected to said second network adjoining said first network, based on the policy held by said policy holding unit and the policy thus received;

updating said policy held by said policy holding unit based on the quality thus calculated; and

sending the policy thus updated to the policy server in said second network.

11. (new): A storage medium storing a computer readable and executable program which causes a computer to guarantee the quality of a communication between a plurality of interconnected networks each including a policy server to provide a quality-guaranteed path between the networks, by performing the method of claim 10.

12. (new): A policy server equipment used in a network system having a plurality of interconnected networks each having a plurality of hosts and a policy server, the policy server of each network sets a quality-guaranteed path in the network in cooperation with each other according to a policy held in each policy server, each policy server comprising:

a policy holding unit for holding a policy that can be guaranteed in a first network to which the respective policy server belongs₁ with regard to a communication performed by another network via said first network or a communication performed between another network and a host in said first network;

a unit for providing a quality-guaranteed path having a required quality on the basis of the policy held by said holding unit, with regard to a communication performed by another network via said first network or a communication performed between another network and the host in said first network;

a policy sending unit for sending the policy held by it to the policy server of another network;

a unit for receiving a policy sent by the policy sending unit in the policy server of said other network; and

a resource allocation arbitration control unit for calculating a guaranteed quality of a communication path from an end point in said first network to a border on a second network side of a connection path connected to said second network adjoining said first network, based on the policy held by said policy holding unit and the policy thus received,

wherein said resource allocation arbitration control unit updates said policy held by said policy holding unit based on the quality thus calculated, and

wherein said policy sending unit sends the policy thus updated to the policy server in said second network.

13. (new): The equipment of claim 12, wherein the guaranteed quality calculation unit calculates qualities that can be guaranteed for paths between the first network and said other networks, and

wherein the quality-guaranteed path setting unit, when it receives from the host of the first network a request for a quality-guaranteed path with a specified quality, provides a quality-guaranteed path which is guaranteed the specified quality and which has a quality calculated by the guaranteed quality calculation unit as being higher than the specified quality.

14. (new): The equipment of claim 12, wherein the guaranteed quality calculation unit calculates qualities that can be guaranteed for paths between the host of the first network and the hosts of the other networks, and

wherein the quality-guaranteed path setting unit, when it receives front the host of the first network a request for a quality-guaranteed path with a specified quality, provides a path which is guaranteed the specified quality and which has a quality calculated by the guaranteed quality calculation unit as being higher than the specified quality.

15. (new): The equipment of claim 14, wherein said quality-guaranteed path setting unit comprises:

a unit to allocate to the quality-guaranteed path extending through the first network as much resource of the first network as is required by the quality level guaranteed for the quality-guaranteed path;

a unit to request the policy server of said other network, through which the quality-guaranteed path to be provided extends, to allocate to the quality-guaranteed path as much resource of said other network as is required by the quality guaranteed for the quality-guaranteed path; and

a unit to allocate the resource of the first network requested by the policy server of said other network to the quality-guaranteed path for which the resource allocation is requested.

16. (new): The equipment of claim 14, wherein the quality-guaranteed path setting unit comprises:

a unit to make a reservation for allocating to the quality-guaranteed path extending through the local network as much resource of the first network as is required by the quality level guaranteed for the quality-guaranteed path;

a unit to request the policy server of said other network, through which the quality-guaranteed path to be provided extends, to make a reservation for allocating to the quality-guaranteed path as much resource of said other network as is required by the quality guaranteed for the quality-guaranteed path;

a unit to make a reservation for allocating the resource of the first network requested by the policy server of said other network to the quality-guaranteed path for which the resource allocation is requested; and

a unit to allocate the resource of the first network according to the set reservation.

17. (new): The equipment of claim 15, wherein the policy server has a resource management unit to manage a present resource allocation state, and

wherein the quality-guaranteed path setting unit performs the resource allocation when the resource allocation is allowed by the present resource allocation state managed by the resource management unit.